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Rangeland Health Evaluation

Eagle Eye Allotment #3027
6Y Ranch Lease Allotment #5042
Christopherson Allotment #5025

Abstract

This Rangeland Health Evaluation is a stand-alone report designed to ascertain compliance with the Arizona Standards for Rangeland Health on the Eagle Eye, 6Y Ranch Lease, and Christopherson grazing allotments.
Standard One is achieved on this complex of allotments.
Standard Two is not applicable to these allotments.
Standard Three is achieved on this complex of allotments.

1.0 Introduction

The purpose of this draft land health evaluation is to gauge whether the Arizona Standard of Rangeland Health (Standards) are being achieved on the Eagle Eye, 6Y, and Christopherson grazing allotments (hereafter the "Eagle Eye Complex" or "Complex") and to determine if livestock are the causal factor for either not achieving or not making significant progress towards achieving land health standards in the case of non-achievement of Standards. An evaluation is not a decision document, but a standalone report that clearly records the analysis and interpretation of the available inventory and monitoring data. As part of the land health assessment process Desired Plant Community (DPC) objectives were established for the Biological Resources (biological objects within the boundaries of the allotments). The DPC objectives will assure that soil condition and ecosystem function described in Standards 1 and 2 are met.

The Secretary of the Interior approved Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration (Guidelines) in April 1997. The Decision Record, signed by the BLM State Director (April 1997) provides for full implementation of the Standards and Guides in Arizona BLM Land Use Plans. See Appendix B for Arizona's Standards for Rangeland Health.
Land Health Standards are measurable and attainable goals for the desired condition of the biological resources and physical components/characteristics of the desert ecosystems found within the boundaries of these grazing allotments.

This evaluation seeks to ascertain: 1) if standards are being achieved, not achieved, and, in cases of not achieved, if significant progress is being made towards achievement of land health. 2) Where it is ascertained that land health standards are not being achieved, determine whether livestock grazing is a significant factor causing that non-achievement.

2.0 Complex Profile

2.1 Complex Location

The Eagle Eye Complex is located south to east of the town of Aguila, Arizona. Eagle Eye and Aguila roads lie on the western side of the complex. Acreages for the allotments within the complex are given in Section 2.2.1, below. A map of the Complex allotments is available in Appendix A.

2.2 Physical Description

2.2.1 Allotment Acreages

The acreages of the allotments within the Eagle Eye Complex are given below.

Land Classification	Eagle Eye Allotment	6Y Allotment	Christopherson Allotment
Public Acres	3858	2873	9162
State Acres	957	1278	6361
Private Land Acres	980	0	89
Total Acres	5795	4151	15612

2.2.2 Climate Data

Climate data for this allotment are taken from the Western Regional Climate Center data available at www.wrcc.dri.edu. The data are based on the National Oceanic and Atmospheric Administration (NOAA) site located in Wickenburg, AZ due east of the complex. Average mean air temperature at this site is 65.7°F, with an average of 150.4 days per year at a daily maximum temperature above 90°F and 61.2 days a year with a daily minimum below 32°F. This is consistent with the Natural Resource Conservation Service (NRCS) Agricultural Handbook 296, which describes the climate of the area as:

> *"The average annual air temperature is 58 to 74 degrees F (15 to 23 degrees C). The freeze-free period averages 285 days and ranges from 205 to 365 days, decreasing in length with increasing elevation."* (USDA 2006)

2.2.3 Precipitation

Precipitation data for the Eagle Eye Complex is taken from the Maricopa County Flood Control District (MCFCD). MCFCD maintains a network of rain, streamflow, and weather stations within the watershed in and surrounding Maricopa County, with publicly available historic station data. The stations below were used in the calculation of precipitation on the Complex:

Station Name	Station Number	Lat	Long	Years of Record	Mean Annual Rainfall
Grass Wash at US 60	5155	33.9401	-113.188	13	7.36
Upper Grass Wash	5145	33.8776	-113.091	12	8.23
Dead Horse Wash	5195	33.781	-113.029	14	7.65
Centennial Wash	5180	33.94325	-113.001	33	8.01
Twin Peaks	5250	33.8836	-112.823	12	8.76
Harquahala Mountain	5185	33.8121	-113.347	21	12.09
Gladden	5170	33.9028	-113.298	32	7.28

2.2.4 Soils Data

Soils data for the Complex are taken from the NRCS soil survey of the Aguila-Carefree area (1986). The soils data is limited to public lands within the complex, and does not include soils present on State trust or privately held lands.

The most dominant soil map unit within the complex is the Mohave loam, calcareous solum, 0-8 percent slope, making up 13.8 percent of the area. This is a well-drained soil on fan terraces, basin floors and

stream terraces. The soil is derived from mixed alluvium with a depth 60 inches or more. The ecological site associated with this soil is the Limy Fan 7-10”pz (R040XB207AZ).

The second most dominant soil within the complex is the Guest Clay, making up 11.7 percent of the area. Guest soils are well drained soils on flood plains. The soil is derived from alluvium dominants from acid and basic igneous rock with a depth of 60 inches or more. The ecological site associated with these soils is the Clayey Swale 7-10”pz (R040XB203AZ).

The third most dominant soil within the complex is the Mohave-Guest complex, making up 10.8 percent of the area. The Mohave soils are well drained soils on fan terraces and flood plains. The soil is derived from alluvium with a depth of 60 inches or more. The ecological site associated with these soils is the Loamy Upland 7-10”pz (R040XB213AZ). Guest soils are well drained soils on flood plains. The soil is derived from alluvium dominants from acid and basic igneous rock with a depth of 60 inches or more. The ecological site associated with these soils is the Clayey Swale 7-10”pz (R040XB203AZ).

The fourth most dominant soil within the complex is the Pinaleno-Tres Hermanos complex, 1-10 percent slopes, making up 8.9 percent of the area. Pinaleno soils are well drained soils on fan and stream terraces. The soil is derived from fan alluvium of mixed rock with a depth of 24 to 60 inches. The ecological site associated with this soil is the Clay Loam Upland 7-10”pz (R040XB205AZ). The Tres Hermanos soils are well-drained soils on alluvial fans and footslopes. The soil is derived from alluvium mainly from igneous rocks with a depth of 40 to 45 inches. The ecological site associated with this soil is the Loamy Upland 7-10”pz (R040XB213AZ).

The fifth most dominant soil within the complex is the Continental-Mohave complex, 1-3 percent slopes, making up 8.3 percent of the area. Continental soils are well drained soils on fan terraces. The soil is derived from alluvium from mixed sources with a depth of 60 inches or more. The ecological site associated with this soil is the Clay Loam Upland 7-10”pz (R040XB205AZ). The Mohave soils are well drained soils on fan terraces and flood plains. The soil is derived from alluvium with a depth of 60 inches or more. The ecological site associated with these soils is the Loamy Upland 7-10”pz (R040XB213AZ).

The sixth most dominant soil within the complex is the Greyeagle-Continental-Nickel association, 1-40 percent slopes, making up 6.8 percent of the area. Greyeagle soils are somewhat excessively drained soils on fan terraces and hillslopes. The soil is derived from mixed alluvium with a depth of 24-60 inches. The ecological site associated with this soil is the Clay Loam Upland 7-10”pz (R040XB205AZ). Continental soils are well drained soils on fan terraces. The soil is derived from alluvium from mixed sources with a depth of 27-60 inches. The ecological site associated with this soil is the Clay Loam Upland 7-10”pz. Nickel soils are well drained soils on fan remnants. The soil is derived from alluvium from mixed rock sources with a depth of 31-60 inches. The ecological site associated with this soil is the Limy Upland 7-10”pz (R040XB210AZ).

The seventh most dominant soil within the complex is the Lehmans-Rock outcrop complex, 8-65 percent slopes, making up 6.4 percent of the area. These are well drained soils on pediments and hills. The soil is derived from slope alluvium from volcanic rock with a depth of 14 inches. The ecological site associated with this soil is the Volcanic Hills 7-10”pz (R040XB210AZ).

The remainder of the soil types present on the allotment include the Continental clay loam, Eba very gravelly loam, Gran soils, Wickenburg soils, Ohaco gravelly loams, and multiple complexes of these and the above described soils.

2.3 Biological Resources

2.3.1 Major Land Resource Areas

The Eagle Eye Complex lies within Major Land Resource Area (MLRA) 40, Sonoran Basin and Range. MLRAs are described in USDA NRCS Agriculture Handbook 296: "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin" (2006). MRLAs describe, on a large-landscape scale, the physiography, geology, climate, water, soils, biological resources and general land use.
Ecological Site Descriptions produced by the NRCS are organized by MLRA for reference purposes.

2.3.2 Ecological Sites

An ecological site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. It is the product of all the environmental factors responsible for its development, and it has a set of key characteristics (soils, hydrology, and vegetation) that are included in the ecological site description. Development of the soils, hydrology, and vegetation are all interrelated. Each is influenced by the other and influences the development of the others. (TR 1734-07, Ecological Site Inventory)
Ecological sites are named and classified based on soil parent material or soil texture and precipitation. There are several ecological sites that occur within the Eagle Eye Complex. The dominant ecological sites on Public lands within the complex are described below. Reference Map 3, Appendix A, for ecological sites occurring on the complex.

NRCS provides Ecological Site Descriptions online at https://esis.sc.egov.usda.gov/.

Limy Fan 7-10"pz R040XB207AZ
This site occurs on fan and stream terraces with slopes ranging from 1-3% and elevations from 1000' to 2000'. Soils are deep and formed in loamy alluvium of moderate age and mixed origins. Plant-soil moisture relationships are poor to fair. The potential plant community is a mixture of desert shrubs, cacti, and annual forbs and grasses. Annual vegetative production is expected to be between 176-455lbs air-dry weight per acre.

Clayey Swale 7-10"pz R040XB203AZ
This site occurs on floodplains and alluvial fans with slopes ranging from 0-2% and elevations from 1100' to 2200'. Soils are deep and formed on clayey alluvium of mixed origins. Plant-soil moisture relationships on the site are very good. The potential plant community on the site is dominated by tobosa grass. Annual forbs and grasses are common. Annual vegetative production is expected to be between 712-880lbs air-dry weight per acre.

Loamy Upland 7-10"pz R040XB213AZ
This site occurs on fan and stream terraces with slopes ranging from 1-15% and elevations from 1000' to 2200'. Soils are deep and formed in loamy alluvium of mixed origins. Plant-soil moisture relationships on this site are fair. The potential plant community is a mixture of desert shrubs, cacti, and annual grasses and forbs. Perennial grasses and forbs are a minor component of the community. Annual vegetative production is expected to be between 300-500lbs air-dry weight per acre.

Clay Loam Upland 7-10"pz R040XB205AZ

This site occurs on fan and stream terraces with slopes ranging from 1-3% and elevations from 1000' to 2050'. Soils are deep and formed in clayey alluvium of mixed origins. Plant-soil moisture relationships on this site are fair. The potential plant community is a mix of grass, forbs, desert shrubs and cacti. Annual vegetative production is expected to be between 300-460lbs air-dry weight per acre.

Volcanic Hills 7-10"pz R040XB210AZ

This site occurs on hillslopes and ridge tops with slopes ranging from 15-65% and elevations from 1000' to 2500'. Soils are shallow and formed on intermediate igneous material. Soils are slightly calcareous, loamy textured and have very well developed covers of cobble, stones and gravel. Rock outcrops can account for up to 35% of the area. Plant-soil moisture relationships are fair to good. The potential plant community is a diverse mixture of desert shrubs, trees and cacti with limited perennial grass. Annual vegetative production is expected to be between 450-575lbs air-dry weight per acre.

2.3.3 General Wildlife Resources

Wildlife species that occur within the Eagle Eye Complex are typical and representative of the vegetative communities present in the area. Species present include, but are not limited to, mule deer, coyote, javelina, mountain lion, bobcat, gray fox, raccoon, desert cottontail, black-tailed jackrabbits, Gambel's quail, great horned owls, and various reptiles, small mammals and migratory birds.

2.3.4 Special Status Species, T&E

Sonoran desert tortoises (Gopherus morafkai), a BLM sensitive species, occupy much of the upland areas in the Eagle Eye Complex. The desert tortoise distribution within the Complex is not uniform. Tortoises tend to occupy hillsides and ridges with outcrops of large boulders as well as areas with incised washes and caliche caves, but may be found in lower densities throughout the area. Tortoises generally use natural and excavated cover sites between or under boulders and in caliche caves along washes wherever they occur. Their diet consists of annual forbs (30.1%), perennial forbs (18.3%), grasses (27.4%), woody plants (23.2%) and prickly pear fruit (1.1%) (Van Devender,et al. 2002).

The Eagle Eye complex contains category I, II, and III desert tortoise habitat. Category I habitat is defined as: 1) Habitat that is essential to the maintenance of large, viable populations; 2) Habitat where conflicts are resolvable; and 3) Habitat that contains medium to high densities of tortoises or low densities contiguous with medium or high densities. Category II habitat is defined as: 1) Habitat that may be essential to the maintenance of viable populations; 2) Habitat where most conflicts are resolvable; and 3) Habitat that contains medium to high densities of tortoises or low densities contiguous with medium or high densities. Category III habitat is defined as: 1) Habitat that is not considered essential to the maintenance of viable populations; 2) Habitat where most conflicts are not resolvable; and 3) Habitat that contains low to medium densities of tortoises not contiguous with medium or high densities. The table below shows the acreages of desert tortoise habitat on public lands within the complex.

Allotment	Category 1 Acres	Category 2 Acres	Category 3 Acres
Eagle Eye	1855	0	2003
6 Y	0	1240	1633
Christopherson	0	5898	3265

2.4 Special Management Areas

No Special Management Areas are contained within the Eagle Eye Complex boundaries.

2.5 Recreational Resources

The complex contains 56.8 miles of existing routes, which are all currently open to all travel modes.

By allotment, miles of routes in each are as follows:

Eagle Eye - 21.4 miles total
15.3 miles are managed by the BLM as primitive roads. 6.1 miles are Maricopa County Roads consisting of Aguila Road and Eagle Eye Road.

6Y Ranch Lease – 8.0 miles total
All 8.0 miles are managed by the BLM as primitive roads.

Christopherson - 27.4 miles total
All 27.4 miles are managed by the BLM as primitive roads.

General public access
Public access generally coincides with routes permitted for use the grazing permittees. Minor maintenance of the existing routes is generally welcomed by the public. Major upgrades to the existing routes are less welcome due to the recreationists' expectation for rough, minimally maintained roads. Improving roads to a higher standard is generally perceived by the public, and the BLM, to invite vandals and new uses which may leave trash or displace authorized use. Improving access can have the effect of increasing use of an area which was previously lightly used, leading to increased litter and increasing impacts to vegetation and water quality.

3.0 Grazing Management

3.1 Grazing History

The current permit and lease holder for the Eagle Eye and 6Y Ranch Lease allotments is the Serrano family. They acquired the allotments in 1989. The Christopherson permit is held by the Shiew family. They acquired the allotment in 2004.

BLM billing records show continuous use on these grazing allotments since the 1960s. Livestock have likely been present in this area since the mid-1800s.

3.2 Mandatory Terms and Conditions for Permitted Use

The 6Y Ranch Lease and Christopherson allotments are classified as perennial allotments. Grazing occurs year-long at varying levels of intensity. The Eagle Eye allotment is classified as ephemeral. Grazing occurs infrequently during periods of annual vegetation production. The Mandatory Terms and Conditions of the permits and leases are listed below:

Allotment Name	Allotment Number	Livestock Number	Livestock Kind	%PL	Type Use	AUMs
Eagle Eye	03027	0	Cattle	67	Ephemeral	0
6Y Ranch Lease	05042	25	Cattle	71	Active	213
Christopherson	05025	156	Cattle	73	Active	1367

4.0 Objectives

4.1 Relevant Planning and Environmental Documents

The Taylor Grazing Act of 1934 provides for two types of authorized use: (1) A *grazing permit*, which is a document authorizing use of the public lands within an established grazing district, and are administered in accordance with Section 3 of the Taylor Grazing Act; and (2) a *grazing lease*, which is a document authorizing use of the public lands outside an established grazing district, and are administered in accordance with Section 15 of the Taylor Grazing Act. The Eagle Eye allotment is a Section 3 grazing permit; the 6Y Ranch Lease and Christopherson allotments are Section 15 grazing leases.

The BLM is responsible for establishing the appropriate levels and management strategies for livestock grazing in these allotments. Grazing permits issued must be in compliance with the multiple use and sustained yield concepts of FLPMA and the Fundamentals of Rangeland Health (43 CFR 4180), and be in accordance with the Guidelines for Grazing Administration while continuing to achieve Arizona Standards for Rangeland Health.

Land Health Standards:
On April 28, 1997, the Secretary of Interior approved the implementation of the *Arizona Standards for Rangeland Health and Guidelines for Grazing Administration* for all Land Use Plans in Arizona. The purpose of the Standards and Guidelines is to maintain or improve the health of the public rangelands. Standards and guidelines are intended to help the Bureau, rangeland users and others focus on a common understanding of acceptable resource conditions and work together to achieve that vision. Standards and Guidelines were incorporated into Phoenix District land use plans in 1997 and into the *Bradshaw-Harquahala RMP* in 2010.

As defined by the Arizona Resource Advisory Council, "Standards" are goals for the desired condition of the biological and physical components and characteristics of rangelands. "Guidelines" are management approaches, methods, and practices that are intended to achieve a standard. Guidelines are developed and applied consistent with the desired condition and within the site's capability and specific public land uses, and may be adjusted over time. Arizona S&Gs are defined as the following:

Standard 1 - Upland Sites
Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).

Standard 2 - Riparian - Wetland Site
Riparian-wetland areas are in proper functioning condition.

Standard 3 - Desired Resource Conditions

Productive and diverse upland and riparian-wetland communities of native species exist and are maintained.

The Bradshaw-Harquahala Resource Management Plan (2010) contains additional desired future condition objectives for wildlife special status species. For the Eagle Eye Complex, the desired future condition objectives for Sonoran desert tortoise are applicable. These objectives are given below:

> *"TE-3. In Category I and II areas, vegetation will consist of at least 5 percent native perennial grasses, at least 10 percent native perennial forbs or subshrubs, at least 30 percent native trees and cacti, by dry weight, as limited by the potential of the ecological site as described by the Natural Resource Conservation Service (NRCS) ecological site guides."*

4.2 Key Area Objectives

Specific Key Area objectives step down from the Desired Future Condition objectives found in the Bradshaw-Harquahala RMP (2010). These Key Area specific objectives are designed to assess Public Land conformance to the Arizona Standards for Rangeland Health on the Eagle Eye Complex.

There are 5 active Key Areas on the Eagle Eye Complex. The Eagle Eye allotment contains 1 Key Area. The 6Y Ranch Lease and Christopherson allotments each contain 2 Key Areas. Christopherson Key Area 1 is on State Trust Lands and was replaced by Key Area 3 approximately 200 yards west of the original key area. The table below shows the active key areas on the complex:

Allotment	Key Area	Ecological Site
Eagle Eye	KA1	Loamy Upland 7-10"pz
6Y Ranch Lease	KA1	Clayey Swale 7-10"pz
	KA2	Loamy Upland 7-10"pz
Christopherson	KA2	Clayey Swale 7-10"pz
	KA3	Limy Fan 7-10"pz

Desired Plant Community (DPC) Objectives were developed for each Key Area within the Complex by an interdisciplinary team of BLM resource specialists and biologists. These objectives are designed to maintain or improve the biotic integrity of the Public Lands, provide for wildlife habitat, and provide for usable forage as limited by the potential of the ecological site. These objectives, and the rationale for each objective, are given below.

4.2.1 Standard 1- Upland Sites, applies to all key areas.

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site). (Bradshaw-Harquhala RMP decision LH-1)

Soil erosion on the key area is appropriate to the ecological site on which it is located. Factors indicating conformance to Standard 1 include ground cover, litter, vegetative foliar cover, flow patterns, rills, and plant pedestalling in accordance to developed NRCS Ecological Site Guides and/or Reference Sheets. Deviations that are "slight" or "slight to moderate" from the appropriate site guide or reference are considered meeting the Standard. Departures of Moderate or greater will not meet the Standard except in cases where the departure is documented as showing an improvement of land health over what is expected on a reference site.

4.2.2 Standard 3- Desired Resource Condition Objectives

Objective: Productive, diverse upland and riparian-wetland plant communities exist and are maintained.

DPC objectives detail a site-specific plant community, which, when obtained, will assure rangeland health, State water quality standards, and habitat for endangered, threatened and sensitive species. Because DPC objectives are site-specific, Key Areas located on similar stratum may have difference DPC objectives. This is due to differences in slope, elevation, aspect and rainfall factors, as well as other site potential limiting factors such as prior disturbance, rock outcroppings, or heavy gravel cover. The recommended palatable shrub and grass compositions will provide for adequate wildlife forage on the site for species such as Sonoran desert tortoise, mule deer, quail, and other non-game wildlife species. The foliar cover and bare ground cover class objectives will provide thermal and hiding cover for wildlife species and will prevent accelerated erosion on the sites.

Sonoran desert tortoise habitat requirements are listed in the Bradshaw-Harquahala RMP. The DPC objectives for each key area are consistent with the Sonoran desert tortoise habitat requirements based on the potential for the site.

Eagle Eye Allotment

Key Area 1, Loamy Upland 7-10" ecological site:

- Maintain a palatable shrub composition at $\geq$20%
- Maintain a foliar cover of $\geq$15%
- Maintain a bare ground cover class of $\leq$40%

Rationale:
This Key Area is located on a terrace at an elevation of approximately 2270'.

Rationale is taken from the NRCS Loamy Upland ecological site guide and reference sheet. Both the ecological site guide and reference sheet state that perennial grasses make up a minor component of this ecological site. While perennial grass was present on the site, a perennial grass DPC objective was not set due to the low grass cover on the site and a limited potential for grass recruitment. The ecological site guide calls for shrub composition from 45-75% for all species. When considering species that are palatable to wildlife, maintaining a palatable shrub composition of equal to or greater than 20% is appropriate to the site and falls within the guidelines of the ESD. The reference sheet shows a canopy cover class between 15-25%. Due to this site being on the lower end of the ESD rainfall range, a foliar cover class of 15% is appropriate to the site and within the ranges provided in the reference state. The reference sheet calls for a bare ground cover class between 10-60%, dependent upon annual rainfall. A bare ground cover class of less than or equal to 40% is appropriate to the site given its rainfall regime and the reference state.

6Y Ranch Lease Allotment

Key Area 1, Clayey Swale 7-10”pz ecological site:

- Maintain a perennial grass composition of ≥70%
- Maintain a foliar cover of ≥30%
- Maintain a bare ground cover class of ≤35%

Rationale:
This Key Area is located on a terrace at an elevation of approximately 2200’.

Rationale for DPC objectives is taken from the NRCS Clayey Swale ecological site guide and reference sheet. The ecological site guide shows a perennial grass composition of 60-68% at historic climax plant community, and the reference sheet shows 85-90% of the canopy cover is perennial grasses in the reference state. The perennial grass objective of 70% composition slightly exceeds the historic climax plant community but is based on the low shrub and tree cover present on the site. The reference sheet calls for a canopy cover between 20-30%. The foliar cover objective falls within this range. In the reference state, the bare ground ranges from 20-60%. The bare ground cover class objective falls within this range. Due to the low gravel cover on this site, 35% or less bare ground was deemed appropriate based on the slope, aspect, and erodibility of these soils.

Key Area 2, Loamy Upland 7-10”pz ecological site:

- Maintain a perennial grass composition of ≥10%
- Maintain a foliar cover of ≥10%
- Maintain a bare ground cover class of ≤50%

Rationale:
This Key Area is located on a terrace at an elevation of approximately 2220’.

Rationale is taken from the NRCS Loamy Upland ecological site guide and reference sheet. Both the ecological site guide and reference sheet state that perennial grasses make up a minor component of this ecological site. This site is at a lower elevation than Eagle Eye Key Area 1, and includes small inclusions of more clayey soils facilitating grass production. Due to the limited nature of these inclusions, a perennial grass composition of equal to or greater than 10% is expected to maintain the perennial grasses on the site and allow for additional recruitment. Due to the presence of perennial grasses on the site, and the proximity of the Clayey Upland ecological site, a palatable shrub composition was not set for this Key Area. The reference sheet shows a canopy cover class between 15-25%. Due to this site being on the lower end of the ESD rainfall range, a foliar cover class of 10% is appropriate to the site. The reference sheet calls for a bare ground cover class between 10-60%, dependent upon annual rainfall. A bare ground cover class of less than or equal to 50% is appropriate to the site given its rainfall regime and the reference state.

Christopherson Allotment

Key Area 2, Clayey Swale 7-10”pz ecological site:

- Maintain a perennial grass composition of ≥70%
- Maintain a foliar cover of ≥30%
- Maintain a bare ground cover class of ≤45%

Rationale:
This Key Area is located on a terrace at an elevation of approximately 2210’.

Rationale for DPC objectives is taken from the NRCS Clayey Swale ecological site guide and reference sheet. The ecological site guide shows a perennial grass composition of 60-68% at historic climax plant

community, and the reference sheet shows 85-90% of the canopy cover is perennial grasses in the reference state. The perennial grass objective of 70% composition slightly exceeds the historic climax plant community but is based on the low shrub and tree cover present on the site. The reference sheet calls for a canopy cover between 20-30%. The foliar cover objective falls within this range. In the reference state, the bare ground ranges from 20-60%. The bare ground cover class objective falls within this range. Due to the absence of gravel cover on this site, 45% or less bare ground was deemed appropriate based on the slope, aspect, and erodibility of these soils. This site is located at a slightly higher elevation than 6Y Key Area 1, and is expected to have a lower available water, leading to an increased bare ground potential in comparison.

Key Area 3, Limy Fan 7-10"pz ecological site:

- Maintain a palatable shrub composition of ≥15%
- Maintain a foliar cover of ≥15%
- Maintain a bare ground cover class of ≤35%

Rationale:
This Key Area is located on a fan at an elevation of approximately 2310'.

Rationale of DPC objectives is taken from the NRCS Limy Fan ecological site guide and reference sheet. The ecological site guide and reference sheet show a limited potential for perennial grasses on the site, with the reference sheet showing none occurring in the reference state. A perennial grass DPC objective was not set due to this. The ecological site guide shows a shrub component from 44-88%. When considering the species within this shrub component that serve as forage species for wildlife, a palatable shrub composition of equal to or greater than 15% is appropriate to the site. In the reference state, canopy cover is expected to be between 10-15%. The foliar cover DPC objective falls within the range of the reference state. Bare ground on the site is expected to be between 10-60% depending on gravel and litter cover. The bare ground cover class DPC falls within this range and is appropriate to the site.

5.0 Inventory and Monitoring Data

5.1 Rangeland Survey Data

Rangeland Inventory was completed on the Eagle Eye Complex in 1981. This inventory was completed using the Modified Soil Vegetation Inventory Methodology based on BLM Handbook H-4410-1, "National Range Handbook" and Technical Reference 1734-7, "Ecological Site Inventory". The inventory was used to determine range condition and apparent trend as described in the 1982 Lower Gila North Draft Grazing Environmental Impact Statement.

5.2 Monitoring Protocols

Monitoring protocols used at the Key Areas on the allotments include a variety of study methods. Compliance with Standard One is completed using the Interpreting Indicators of Rangeland Health study method, as described in BLM Technical Reference 1734-6 Version 4 (2005). This study method is supplemented with quantitative data collected in the methods described below.

Compliance with Standard Three is completed using a variety of upland study methods. On 6Y Key Area 1 and Christopherson Key Areas 2 and 3, Dry Weight Rank, Point Cover, and Pace Frequency are used for vegetative monitoring. These methods are described in detail in BLM Technical Reference 1734-4, "Sampling Vegetation Attributes". For these methods, a 40X40 centimeter quadrat was used, with a single point located along the rear edge of the frame for point cover data. On Eagle Eye Key Area 1 and 6Y Key Area 2, Belt Density, Line Intercept, and Point Cover are used due to the low vegetative cover of these sites.

Utilization data was collected at each Key Area using the Key Species method. This method is described in BLM Technical Reference 1734-3, "Utilization Studies and Residual Measurements".

6.0 Management Evaluation and Summary of Studies Data

6.1 Actual Use

Actual Use reporting is not required on any of the allotments in the Eagle Eye Complex. The BLM administered portions of the Eagle Eye allotment are used intermittently, as the allotment is classified as Ephemeral. Actual use reporting is not required on these allotments. Livestock numbers provided in the tables below are based on actual use reports as available, and billed use.

6.1.1 Eagle Eye Allotment

Number of Active Livestock	Kind	Grazing Begin	Period End	%PL	AUM"s
454	Cattle	3/9/2010	5/9/2010	67	605
186	Cattle	2/13/2008	5/27/2008	67	704
1112	Cattle	4/1/2001	4/30/2001	67	735

6.1.2 6Y Ranch Lease Allotment

Number of Active Livestock	Kind	Grazing Begin	Period End	%PL	AUM"s
25	Cattle	3/1/14	2/28/15	71	213
25	Cattle	3/1/13	2/28/14	71	213
25	Cattle	3/1/12	2/28/13	71	213
25	Cattle	3/1/11	2/28/12	71	213
25	Cattle	3/1/10	2/28/11	71	213
25	Cattle	3/1/09	2/28/10	71	213
25	Cattle	3/1/08	2/28/09	71	213
25	Cattle	3/1/07	2/28/08	71	213
25	Cattle	3/1/06	2/28/07	71	213
25	Cattle	3/1/05	2/28/06	71	213
25	Cattle	3/1/04	2/28/05	71	213

6.1.3 Christopherson Allotment

Number of Active Livestock	Kind	Grazing Begin	Period End	%PL	AUM"s
156	Cattle	3/1/14	2/28/15	73	
156	Cattle	3/1/13	2/28/14	73	
156	Cattle	3/1/12	2/28/13	73	
0	Cattle	3/1/11	2/28/12	73	
156	Cattle	3/1/10	2/28/11	73	1367
156	Cattle	3/1/09	2/28/10	73	1367
156	Cattle	3/1/08	2/28/09	73	1367
156	Cattle	3/1/07	2/28/08	73	1367
156	Cattle	3/1/06	2/28/07	73	1367
100	Cattle	3/15/05	5/31/05	73	187
156	Cattle	3/1/04	2/28/05	73	1367

7.0 Conclusions

7.1 Upland Health Conclusions

Summary of Standard Achievement or Non-achievement for all Key Areas:

Allotment	Key Area	Standard One	Standard Three
Eagle Eye	KA1	Achieved	Achieved
6 Y	KA1	Achieved	Achieved
	KA2	Achieved	Achieved
Christopherson	KA2	Achieved	Achieved
	KA3	Achieved	Achieved

Upland Health Conclusions are based on the analysis of the current monitoring data for each key area. Standard Three analysis is based on Dry Weight Rank and Point Cover study methods or on Belt Density and Line Intercept study methods. Grass composition results are based on the sum composition percent for all grass species occurring on the study area. Palatable shrub composition results are based on the sum composition percent for all palatable browse species as listed, by animal species, in Appendix A, Section 3, “Eagle Eye Complex Plant List”. Vegetative foliar cover and bare ground cover class results are based on point cover data.

Utilization data is used to determine if livestock are a potential causal factor for non-achievement of Standards. Based on Holechek (1988), livestock utilization levels in this precipitation zone should be between 30-40% for moderate use without producing deleterious effects to the ecological site. Based on Heffelfinger(2006), browse utilization in this precipitation zone should be limited to 35% to prevent deleterious effects to deer habitat.

7.1.1 Eagle Eye allotment

Key Area 1

Standard One: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the site reference state. Soil and Site Stability and Hydrologic Function ratings are both categorized as a "None to Slight Departure" from the reference state. Reference Section 2.1.1 of Appendix A.

Standard Three: Standard is achieved on this site.

- Maintain a palatable shrub composition at ≥20% ACHIEVED
- Maintain a foliar cover of ≥15% ACHIEVED
- Maintain a bare ground cover class of ≤40% ACHIEVED

Rationale:
The palatable shrub composition objective is met for desert tortoise on this site, at 38%. Foliar cover on the site was calculated to be slightly more than 19%, meeting the DPC objective. Bare ground on the site was calculated to be slightly more than 23%, meeting the DPC objective.

Utilization data on this key area shows use of 3-awn grass at 7.5%.

7.1.2 6Y Ranch Lease allotment

Key Area 1
Standard One: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the site reference state. Soil and Site Stability and Hydrologic Function ratings are both categorized as a "None to Slight Departure" from the reference state. Reference Section 2.2.1 of Appendix A.

Standard Three: Standard is achieved on this site.

- Maintain a perennial grass composition of ≥70% ACHIEVED
- Maintain a foliar cover of ≥30% NOT ACHIEVED
- Maintain a bare ground cover class of ≤35% ACHIEVED

Rationale: The perennial grass composition is met for Sonoran desert tortoise on this site, at 79%.:
The perennial grass composition objective is met on this site, with a perennial grass composition of just slightly less than 79%. Foliar cover objectives are not met on this site, with foliar cover being calculated at 28%. The bare ground cover class objective is met on this site, with a bare ground cover class of 7%. Extensive litter was present on the site, both from annual species and perennial grasses.

Utilization on the site was calculated between 2.5 and 7% in 2013 and 2015. Based on these low utilization levels, it is unlikely that livestock are a causal factor for partial non-achievement of Standard 3.

Key Area 2:

Standard One: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the site reference state. Soil and Site Stability and Hydrologic Function ratings are both categorized as a "None to Slight Departure" from the reference state. Reference Section 2.2.2 of Appendix A.

Standard Three: Standard is achieved on this site.

- Maintain a perennial grass composition of ≥10% ACHIEVED
- Maintain a foliar cover of ≥10% ACHIEVED
- Maintain a bare ground cover class of ≤50% ACHIEVED

Rationale: The perennial grass composition is met for Sonoran desert tortoise on this site, at 12.5%. Although a palatable browse objective was not set, the palatable browse component for mule deer was 10% due to the presence of mesquite on the site. The foliar cover objective is met on the site, with a foliar cover of 11%. The bare ground cover class is met on the site, with a cover class of slightly more than 48%.

Utilization on the site was calculated between 2.5 and 7% in 2013 and 2015.

7.1.1 Christopherson allotment

Key Area 2
Standard One: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the site reference state. Soil and Site Stability and Hydrologic Function ratings are both categorized as a "None to Slight Departure" from the reference state. Reference Section 2.3.1 of Appendix A.

Standard Three: Standard is achieved on this site.

- Maintain a perennial grass composition of ≥70% ACHIEVED
- Maintain a foliar cover of ≥30% NOT ACHIEVED
- Maintain a bare ground cover class of ≤45% ACHIEVED

Rationale:
The perennial grass composition objective for Sonoran desert tortoise is met on this site, with a perennial grass composition of 97%. Foliar cover objectives are not met on this site, with foliar cover being calculated at 29%. The bare ground cover class objective is met on this site, with a bare ground cover class of 30%. Extensive litter was present on the site, both from annual species and perennial grasses.

Utilization on the site was calculated between 18 and 15% in 2013 and 2015. Based on these utilization levels, it is unlikely that livestock are a causal factor for partial non-achievement of Standard 3.

Key Area 3

Standard One: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the site reference state. Soil and Site Stability and Hydrologic Function ratings are both categorized as a "None to Slight Departure" from the reference state. Reference Section 2.3.2 of Appendix A.

Standard Three: Standard is achieved on this site.

- Maintain a palatable shrub composition of ≥15% ACHIEVED
- Maintain a foliar cover of ≥15% ACHIEVED
- Maintain a bare ground cover class of ≤35% ACHIEVED

Rationale: The palatable shrub composition objective was met on this site for desert tortoise, with a palatable shrub composition of 91%. The palatable shrub composition is met for mule deer, with a palatable shrub composition of slightly more than 17%. The foliar cover objective is met on this site, with a foliar cover of slightly more than 24%. The bare ground cover class objective is met, with a bare ground cover class of 27%.

Utilization on the site was calculated at 6%.

8.0 Recommended Management Actions

8.1 Recommended Management Actions for Uplands in the Complex

To facilitate orderly management of the range, Actual Use reporting should be added to the terms and conditions of the perennial leases. The lessees have voluntarily submitted Actual Use for several years, however, adding the reporting requirement will ensure appropriate use levels have been maintained during drought years, and will facilitate desired stocking rate calculations in years that Utilization data is collected.

Continued management of the Eagle Eye allotment as an ephemeral only permit is recommended. While year-long forage is available on portions of the allotment, the majority of the public lands within the allotment lack sufficient forage to support a base herd. Areas with perennial forage are within Category I Sonoran desert tortoise habitat around Eagle Eye peak.

The 6Y allotment has potential to support additional livestock following monsoonal green-up of Pleuraphis species. Given current livestock stocking rates and utilization levels, the current perennial stocking rate should be maintained, with a seasonal stocking increase during the warm-season grass growing season. Tobosa species on the allotment would likely benefit from short-term increased grazing to reduce standing dead prior season growth.

9.0 List of Preparers

Name	Title

James Holden	Rangeland Management Specialist
Codey Carter	Wildlife Biologist
Steve Bird	Wild Horse and Burro Specialist
Mary Skordinsky	Recreation Specialist
Tom Bickauskas	Travel Management Specialist

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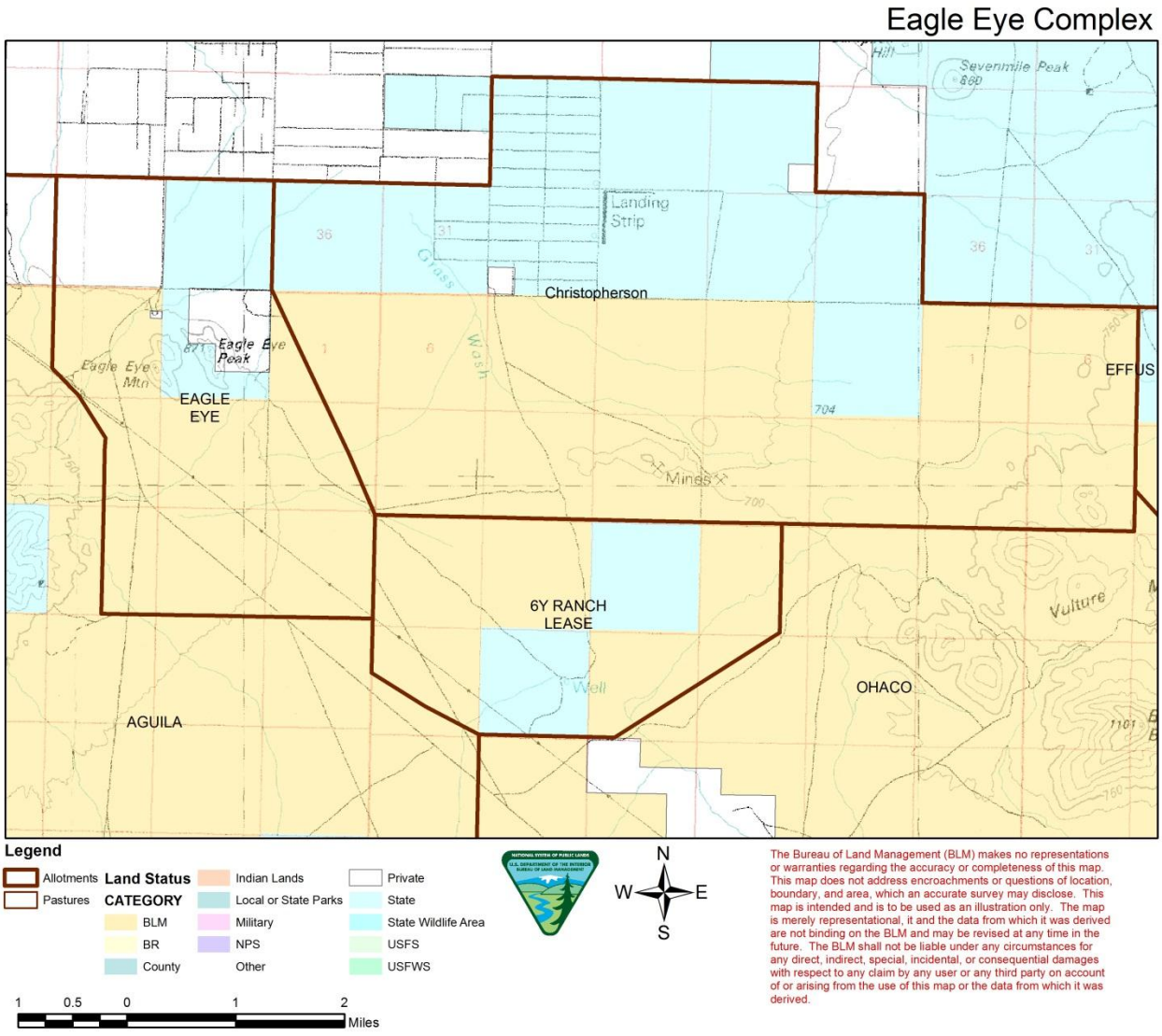
Eagle Eye Complex Data Appendices

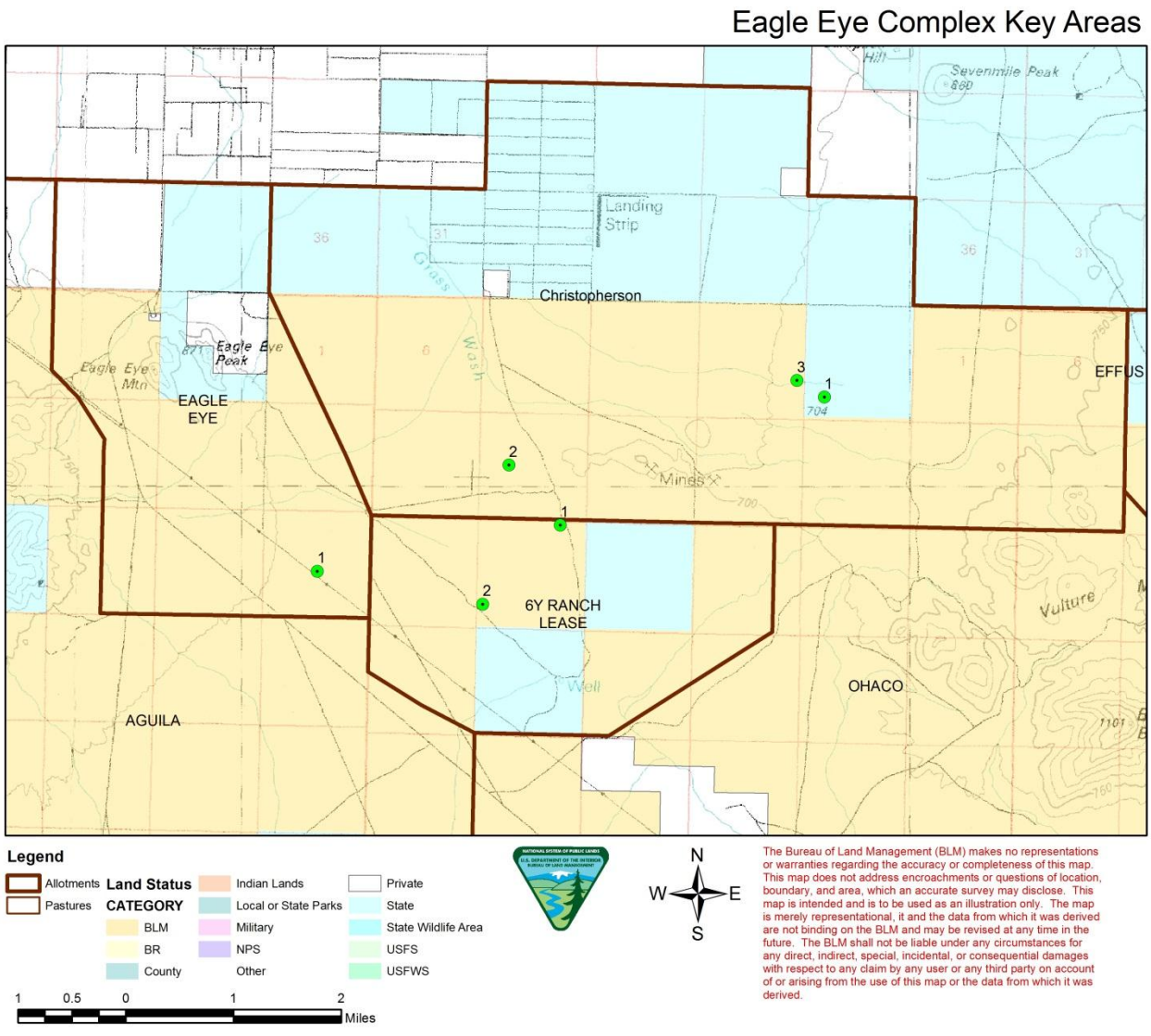
1.0 Complex Maps

Map 1, Eagle Eye Complex Boundaries



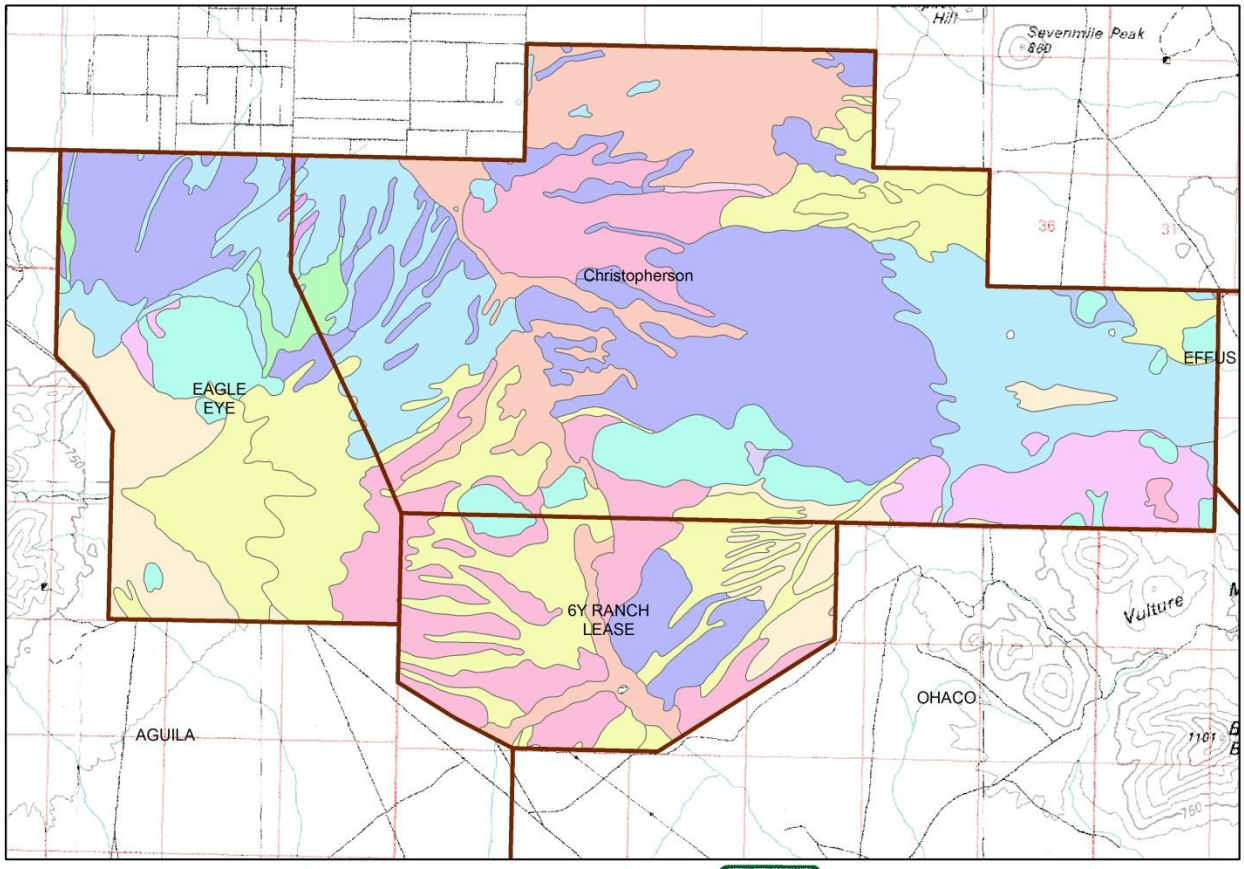
The Bureau of Land Management (BLM) makes no representations or warranties regarding the accuracy or completeness of this map. This map does not address encroachments or questions of location, boundary, and area, which an accurate survey may disclose. This map is intended and is to be used as an illustration only. The map is merely representational, it and the data from which it was derived are not binding on the BLM and may be revised at any time in the future. The BLM shall not be liable under any circumstances for any direct, indirect, special, incidental, or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map or the data from which it was derived.

Map 2, Eagle Eye Complex Key Areas



Map 3, Eagle Eye Complex Ecological Sites

Eagle Eye Complex Ecological Sites



Legend

Ecological Site

- Clay Loam Upland 7-10" p.z.
- Clayey Bottom 7-10" p.z.
- Clayey Upland 10-12" p.z.
- Clayey Upland 7-10" p.z.
- Granitic Hills 7-10" p.z.
- Limy Fan 7-10" p.z.
- Limy Upland 10-12" p.z.
- Limy Upland 7-10" p.z.
- Loamy Upland 10-12" p.z.
- Loamy Upland 7-10" p.z.
- Sandy Loam 7-10" p.z. Deep
- Sandy Loam Upland 10-12" p.z.
- Sandy Loam Upland 7-10" p.z. Fine
- Volcanic Hills 7-10" p.z.

1 0.5 0 1 2 Miles

N W E S

2.0 Key Area Data

2.1 Eagle Eye Allotment

2.1.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Point Cover Data:

Point Cover data were collected in conjunction with Line Intercept and Density data. The percent cover by cover class is given below:

Year	Site	Bare Ground	Herb. Cover	Litter	Rock/Gravel	Cryptogam
2015	1	23.1%	19.6%	40.7%	10.6%	6.0%

Frequency and Composition Data:

Composition data is based on Belt Density Transects.

Plant Species KA1 2014	Symbol	2015 Compositon (%)
Tree and Shrub Species		
Ambrosia deltoidea	AMDE4	36.5%
Larrea tridentata	LATR2	60.9%
Ambrosia dumosa	AMDU2	1%
Peniocereus greggii	PEGR3	0.5%
Prosopis velutina	PRVE	0.5%
Grasses		
Dasyochloa pulchella	DAPU7	0.5%

Utilization data:

KA1 Utilization, 2015		% Use
SPECIES	**SYMBOL**	**1/2015**
3-awn	ARIST	7.5%

2.2 6Y Ranch Lease Allotment

2.2.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Biotic Integrity (B):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.

Codes: N-S (None to Slight) S-M (Slight to Moderate)M (Moderate)M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Gravel (>2mm-3")	Herb. Canopy	Litter	Rock >3"	Live Basal Veg.
2013	7.0%	0%	28.0%	51.0%	0%	14.00%

Frequency and Composition Data:

Plant Species KA1 2013	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Prosopis velutina	PRVE	2.0	1.0
Total			*1*
Grasses			
Pleuraphis mutica	PLMU3	79.0	78.9
Eragrostis cilianensis	ERCI	45.5	13.6
Leptochloa viscida	LEVI5	22.0	6.5
Total			*99*

Utilization Data:

KA1 Utilization		% USE		
SPECIES	**SYMBOL**	**1/2013**	**10/2013**	**1/2015**
Tobosagrass	PLMU3	2.5%	7%	2.5%

2.2.2 Key Area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Biotic Integrity (B):	None to Slight Departure. The observed indicators, when compared to the reference

	state, are consistent with the expected conditions on the site.

Codes: N-S (None to Slight) S-M (Slight to Moderate)M (Moderate)M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Gravel/Stone	Herb. Canopy	Litter	Cryptogam
2013	48.5%	30.5%	11.0%	8.0%	2.0%

Composition Data:

Composition data is taken from belt density transects.

Plant Species KA2 2013	Symbol	Composition (%)
Tree and Shrub Species		
Larrea tridentata	LATR2	77.5%
Prosopis velutina	PRVE	10.0%
Total		*87.5%*
Grasses-Perennial		
Pleuraphis mutica	PLMU3	12.5%
Total		*12.5%*

Utilization Data:

KA2 Utilization, 2014		% USE	
SPECIES	**SYMBOL**	**1/2013**	**1/2015**
Tobosagrass	PLMU3	4.6%	16%

2.3 Christopherson Allotment

2.3.1 Key Area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Biotic Integrity (B):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.

Codes: N-S (None to Slight) S-M (Slight to Moderate)M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Ground Cover data were collected as point cover data in conjunction with Dry Weight Rank and Frequency data. The percent cover by cover class is given below:

Year	Site	Bare Ground	Herb. Cover	Litter	Live Basal Veg
2013	2	30.0%	29.0%	27.0%	14.0%

Frequency and Composition Data:

Composition data is relative composition based on the Dry Weight Rank study method.

KA2 2013 Plant Species	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Prosopis velutina	PRVE	1.0	1.2
Opuntia sp.	OPUNT	2.0	1.8
Grasses-Perennial			
Pleuraphis mutica	PLMU3	85.0	97.0

Utilization Data:

Key Area 2 Utilization		% USE	
SPECIES	**SYMBOL**	**3/2013**	**1/2015**
Pleuraphis mutica	PLMU3	17.9%	15.2%

2.3.2 Key Area 3

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.
Biotic Integrity (B):	None to Slight Departure. The observed indicators, when compared to the reference state, are consistent with the expected conditions on the site.

Codes:N-S (None to Slight)S-M (Slight to Moderate)M (Moderate)M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:
Ground Cover data were collected as point cover data in conjunction with Dry Weight Rank and Frequency data. The percent cover by cover class is given below:

Year	Site	Bare Ground	Herb. Cover	Litter	Gravel	Rock >= 1/2"	Cryptogam
2013	3	27.0%	24.5%	8.5%	31.0%	5.5%	3.5%

Frequency and Composition Data:
Composition data is relative composition based on the Dry Weight Rank study method.

Plant Species KA3 2013	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Ambrosia dumosa	AMDU2	4.5	10.2
Larrea tridentata	LATR2	33.0	80.5
Lycium andersonii	LYAN	0.5	1.1
Prosopis velutina	PRVE	3.0	6.1
Total		*41*	*97.9*
Forbs- Perennial/Biennial			
Amsinckia	AMSIN	1.0	
Erodium	ERODI	0.5	
Perezia	PEREZ2	0.5	
Phoradendron	PHORA	1.0	0.5
Plantago	PLANT	0.5	
Unknown Forb		1.5	1.5
Total		*5*	*2*

Utilization data:

Key Area 3 Utilization		**% USE**
SPECIES	**SYMBOL**	**1/2015**
Ambrosia dumosa	AMDU2	6%

3.0 Eagle Eye Complex Plant List

The following plant list comprises all the plant species identified on long-term monitoring transects. This list is not exhaustive nor all inclusive of the plants on the Complex. Plant species on the list are identified by common name, scientific name, and NRCS Plants Database symbol. Palatable plants are identified, by species, for Sonoran desert tortoise, mule deer, and domestic livestock (cattle). Palatability of plant species for Sonoran desert tortoise is taken from VanDevender, et al (2002) and Oftedal (2002). Palatability of plant species for mule deer is taken from the "Habitat Guidelines for Mule Deer: Southwest Deserts Ecoregion" (Heffelfinger 2006). Livestock plant palatability is taken from the Complex-associated Ecological Site Descriptions.

Common Name	Scientific Name	Symbol	Sonoran Tortoise	Mule Deer	Livestock
Triangle bursage	*Ambrosia deltoidea*	AMDE4	X		
White bursage	*Ambrosia dumosa*	AMDU2	X	X	
Fiddleneck	*Amsinckia spp.*	AMSIN			
Fluffgrass	*Dasyochloa pulchella*	DAPU7			
Stinkgrass	*Eragrostis cilianensis*	ERCI			
Stork's bill	*Erodium spp.*	ERODI		X	
Creosote bush	*Larrea tridentata*	LATR2	X		
Sticky sprangletop	*Leptochloa viscida*	LEVI5			
Wolfberry	*Lycium andersonii*	LYAN	X		
Pricklypear	*Opuntia*	OPUNT	X	X	
Night blooming cereus	*Peniocereus greggii*	PEGR3			
perezia	*Perezia*	PEREZ2			
mistletoe	*Phoradendron californicum*	PHCA8		X	
Indian wheat	*Plantago spp.*	PLANT			
Tobosagrass	*Pleuraphis mutica*	PLMU3	X		
Mesquite	*Prosopis velutina*	PRVE	X	X	X